Feb. 16, 1971 M. E. BELICKA ET AL 3,562,843

HUB FOR A ROTARY BRUSH

Filed July 11, 1969

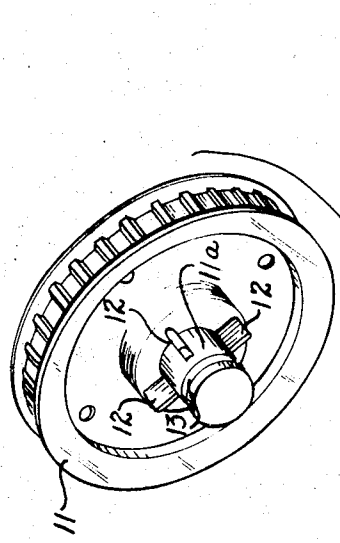


Fig. 1

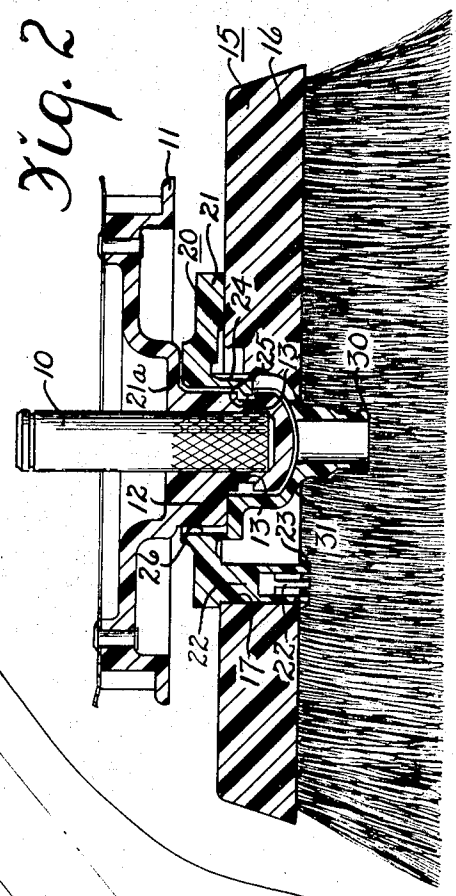
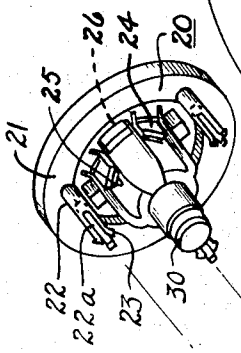


Fig. 2



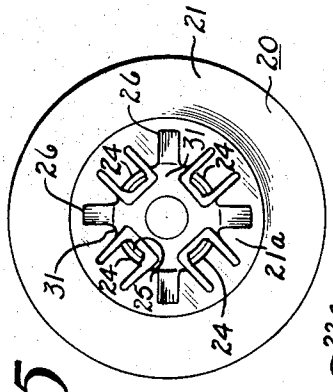


Fig. 5

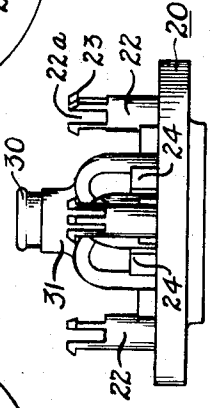
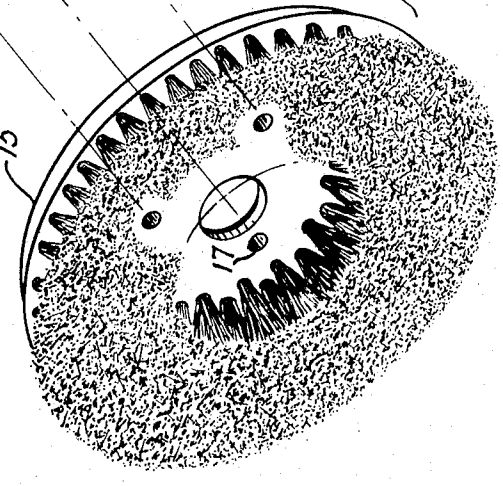


Fig. 3



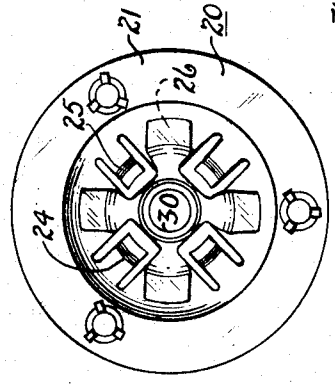


Fig. 4

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United States Patent Office 3,562,843 Patented Feb. 16, 1971

3,562,843

HUB FOR A ROTARY BRUSH

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Filed July 11, 1969, Ser. No. 840,963
Int. Cl. A46b *13/02*; A47l *11/282*
U.S. Cl. 15—180 1 Claim

ABSTRACT OF THE DISCLOSURE

A hub for a rotary, floor scrubbing brush by which the brush is removably attached to the driving spindle of a floor polisher. The hub is connected to the brush back by means of pins which pass through openings in the brush back and the free ends of the pins are deformed or expanded in order to contact the hub at the opposite side of the brush back. In addition, the hub is provided with a central cylindrical projection onto which a buffing pad may be removably attached to the brush. The brush hub according to this invention is also capable of being molded as a single piece for economic manufacture and assembly.

BACKGROUND OF THE INVENTION

The subject invention is concerned with means for attaching and removing brushes of a floor polisher from a driving spindle. Heretofore, scrubbing brushes for floor polishers have been removably held on the associated drive spindle by means of a snap ring or hairpin spring which caught in a recess of the drive spindle for holding the brush on the spindle and holding the driving lug means of the spindle and associated brush in engagement. However, in removing a brush with such a connector it is very difficult for a housewife to pull the brush axially away from the spindle and ordinarily the user tends to pull the brush at an angle to the spindle. This can be done with the prior art latching arrangement so long as the relative movement between the brush and the spindle does not move the snap ring or spring further into the spindle recess, since the brush is then more difficult to remove and the user cannot determine whether he is pulling the brush in this direction or not and believes the connection is either defective or too stiff. With the latching arrangement according to this invention this difficulty is overcome. In addition, it has been necessary heretofore to provide a member for attaching buffing pads to the brushes of a floor polisher which member was either fixed onto the brush back or provided as a separate piece which is subject to being misplaced and lost. The need for a member fixed to the brush back requires an added manufacturing operation, stocking and handling of the separate piece thereby increasing the cost of the brush. The provision of a separate piece not only has the disadvantage of an added manufacturing operation, but also the purchaser is subject to the inconvenience of losing the separate piece. This invention obviates all of the foregoing disadvantages.

SUMMARY OF THE INVENTION

A rotary brush having a hub member in accordance with this invention consists of a single molded hub member which is permanently attached to the brush by means of pins extending through openings in the brush back. The ends of the pins are deformed by the application of heat or the ends of the pins are hollowed and formed with barbs so that the barbs pass through the openings in the brush back and expand after passing through these openings whereby the hub is quickly and easily attached

to the brush back for economic manufacture and assembly. The hub and associated brush is removably held on the driving spindle by means of axially rigid but radially flexible fingers having radially tips which extend into the spindle recess. These fingers, due to their radial flexibility, allow for easy removal of the brush from the spindle at any angle with the spindle axis, thereby improving the removability of the brush from the spindle. The one piece molded hub has an axial cylindrical projection forming a snap button by means of which a buffing pad, or the like may be attached thereto. The provision of this projection on the molded hub member does not require a separate manufacturing operation and it eliminates the necessary for a separate pad fastening piece which is subject to being lost.

Therefore an object of the invention is to provide an improved rotary brush for a floor polisher.

Another object of the invention is to provide a hub for a rotary brush.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an exploded perspective view of a rotary brush for a floor polisher having a hub according to a presently preferred embodiment of the invention;

FIG. 2 is a cross-sectional assembly view of the parts shown in FIG. 1;

FIG. 3 is a side elevational view of the hub member shown in FIGS. 1 and 2; and

FIGS. 4 and 5 are top and bottom views, respectively, of the hub shown in FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIGS. 1 and 2, a known type of driving spindle **10** is fixed to a gear wheel **11** of a floor polisher (not shown). The central portion **11***a* of the gear is provided with a number of incumferentially spaced driving lugs **12** and an annular groove or recess **13** is also provided thereon whereby a brush **15** having a back **16** may be removable connected to the spindle. In accordance with this invention, a hub generally designated **20** is connected to the brush back **16** for removably attaching the brush **15** to the spindle **10**. The hub **20** may consist of any suitable moldable synthetic resin material and includes an annular, outer web portion **21** from which a plurality of pins **22** project. The brush back **16** is provided with a plurality of openings **17** through which the pins **22** pass and extend beyond the bristle side of the brush back. The pins **22** may be solid (not shown) so that they can be "headed" by any suitable known heat generating or high frequency welding apparatus. As shown in the drawing, the pins are preferably hollow at the free ends **22***a* and have radially outwardly extending barbs **23**.

As shown in FIG. 2, when the hub **20** is placed on the brush back the pins **22** pass through the openings **17** since the barbs **23** are free to move inwardly as they are pushed through the brush back openings **17**. Once the hub is engaged firmly with the brush back the barbs expand radially beyond the openings **17** on the opposite or bristle side of the brush back, thereby fixing the hub in place. The pins **22** also as drive members between the brush and the hub, i.e. the driving force imparted by the spindle to the hub, is further transmitted by the pins **22** to the brush back.

In addition to the outer annular web portion **21**, the hub **20** also includes an inner web portion **21***a* having a plurality of latching fingers **24** which extend in an axial direction. Each finger is relatively rigid in the axial direction and has an inwardly projecting lip **25** at its free end. The lip **25** is adapted to engage within the recess **13** of the spindle **10** and the length of the fingers is appropriately dimensioned to this end.

The inner annular web portion **21***a* is also provided with pockets **26** for receiving the lugs **12** of the driving spindle **10**. As shown in the drawing, the pockets **26** are disposed between adjacent fingers **24** and are four in number, equal to the number of latching fingers. However, the number of pockets **26** and latching fingers need not be the same.

A button **30** for attaching a buffing pad (not shown) to the brush **15** is formed integral with the hub **20** and is connected to the hub by means of a number of struts **31** which extend axially from the inner web **21***a* in shipment with the lug pockets **26**. Thus, the latching fingers are disposed between the struts **31** but the struts **31** are dimensioned to position the button **30** beyond the bristled surface of the brush back and form a stop for the free end of the driving spindle so that the lips **25** of the fingers **24** positively register with the recess **13** thereof. However, the same result may be obtained, i.e. registering the lips **25** of fingers **24** with the recess **13** of spindle **10**, by suitably dimensioning the axial dimension of the lugs and the axial depth of the pockets. As a result, the user cannot push the brush onto the driving spindle until it stops without having the fingers' lips snap into the spindle recess.

The operation of the above described device is as follows:

When it is desired to attach the brush **15** to the gear **11** of the spindle **10**, the central portion **11***a* of the gear is introduced into the hollow central space of the hub number **20**, the resilient fingers **24** of the latter being sprung radially outwardly until the lips **25** thereon come into alignment with the annular groove **13**. The resiliency of the arms **24** causes the lips **25** to engage the groove with sufficient force to retain the brush **15** in place.

During operation of the floor polisher the brush bristles rest on the floor, the brush **15** thus supporting the weight of the rest of the floor polisher. Hence, under these conditions there is no tendency for the brush to become detached from the spindle as the force of gravity holds them together. As above explained, torque is transmitted from the central portion **11***a* of the gear through the lugs **12** to the hub number **20** and thence by the pins **22** to the brush back **16**. The fingers **24** are not required to transmit any torque, but only have to sustain the weight of the brush **15** when the floor polisher is lifted off the floor.

When it is desired to remove the brush from the gear **11**, the brush back **16** may be grasped at any point on its circumference and pulled in a direction away from the gear. Although this will tend to tilt or cock the back with respect to the spindle, the motion nevertheless will pull the resilient finger **24** which is radially in line with the point where the back is grasped, or the two fingers which are on either side thereof if the back is grasped at a point between two fingers, out of the groove **13**, and further tilting movement will disengage the remaining fingers.

What is claimed is:

1. A floor polisher brush latching and drive apparatus comprising a brush back having bristles extending from one surface thereof, a centrally located bore extending through said brush back, a hub member having an outer annual web portion overlying said brush back on the surface thereof opposite said one surface, means connected with said outer annular web portion for connecting said hub onto said brush back; said hub having an inner annular web portion which is integral with said outer annular web portion, said inner annular web portion overlying said bore, a plurality of axially extending fingers integral with said inner web portion, each of said fingers terminating within said bore having a radially inwardly extending lip at the terminal end of each finger, a plurality of driving lug pockets in said inner web portion, a plurality of struts extending axially from said inner web portion, said struts terminating in a button means axially remote from said inner web, and said button means extending beyond the bristle surface of said brush back.

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U.S. Cl. X.R.

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